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AN ESSAY ON AUSCULTATION AS APPLIED TO CARDIAC DISEASES,

CONTAINING A NEW HYPOTHESIS REGARDING THE SOUNDS OF THE HEART.

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[Communicated for the Boston Medical and Surgical Journal.]

REMARK.—By a reference to the London "Medico-Chirurgical Review" for April 1833, it appears that the leading principle of the hypothesis advanced in the following essay has been already communicated to the public by two European physicians, Dr. Rouanet of Paris, and Dr. Billing of London. Probably the hypothesis was originated by each of those gentlemen—certainly it was by the author of the following remarks, which were communicated in a course of lectures on the use of the stethoscope, delivered by request to the class in the Medical Institution of Yale College, during the winter of 1832–3, several months before we received any notice of the views of Drs. Rouanet and Billing. Having seen only a brief notice of the Essays of those gentlemen, I know not how nearly we coincide in the details of our hypotheses:—in the leading principle, the *valvular origin* of the sounds of the heart, it appears that we agree.

New Haven, Connecticut, October, 1833.

THE physiology and diseases of the heart have in different ages been a favorite subject of investigation. This subject received special attention from Albertini, Lower, Lancisi, Valsalva, Morgagni, and several other of the older writers. Their writings, however, contain but little regarding the pathology of the heart, besides descriptions of particular cases, with no systematic arrangement of the various diseases to which this organ is subject. Previously to the present century these diseases had not been classified, and their symptoms defined, so that the practitioner could distinguish them in the living patient.

The first publication, which could claim the character of a systematic pathological treatise on cardiac diseases, was that of Corvisart. This author, by his own practical investigations, with the aid of the numerous facts recorded by the older writers, did much towards elucidating this branch of pathology. The art of *percussion*, which had been recommended by Avenbrugger several years before, and the *manual examination* of the exterior of the chest, were the mechanical methods of exploration on which Corvisart principally depended.

Percussion affords some indication regarding the dimensions of the heart. Over the region of the heart percussion elicits a dull, fleshy sound; and, in cases of dilatation of the organ, the extent of this dull sound indicates the degree of dilatation. This indication, however, is equivocal, from the fact that an extension of the dull sound may be produced, not only by an enlarged heart, but by a fluid distending the pericardium, by water or a tumor within the cavity of the mediastinum, or by a solidification of a portion of lung contiguous to the heart.

Manual examination of the exterior of the chest affords many valuable diagnostic signs, and justly received much attention from Corvisart. The hand applied to the precordial region easily feels the pulsations of the heart—the regularity of the pulsations is thus ascertained; and from the *impulse* of the heart against the thoracic parietes, the energy of its action is estimated. Contraction of the orifices of the heart, and imperfection of the valves, cause a vibratory thrill perceptible to the hand.

Subsequently to the publication of Corvisart, the discovery of auscultation threw new light on this subject; and by the aid of this art more has been done to elucidate this branch of pathology within the last fifteen years, than had been accomplished in all preceding ages. Auscultation almost entirely supersedes the manual examination; for all the signs perceived by the application of the hand are perceptible to the ear in auscultation. Auscultation discovers, also, a new class of phenomena, highly important as physical signs—the *sounds* of the heart.

Two classes of phenomena, therefore, are observed in applying the stethoscope to the precordial region; 1st, the *impulse*, succussion, or shock, communicated to the parietes of the chest by the motions of the heart; and 2nd, the *sounds* produced by these motions. The former class is perceptible to the ear simply through the sense of feeling, and is almost equally perceptible by the application of the hand. The latter class depends on acoustic principles, and is perceptible only through the sense of hearing.

The action of the heart, as investigated by auscultation, may be studied under four general heads; viz.

1st. The *Sounds* produced by the pulsations.

2nd. The *Impulse*, or *Shock*—that is, the concussion of the thoracic parietes produced by the pulsations.

3rd. The *Extent*, or the space over which the pulsations are perceived.

4th. The *Rhythm*, or the order of succession in which the different actions and sounds occur.

I. *The Sounds.*

When the stethoscope is applied to the precordial region, two successive, distinct sounds are heard, corresponding to each beat of the arterial pulse—that is, to each beat of the arterial pulse the heart produces two sounds. The *first* sound, though distinct, is somewhat dull and prolonged. The *second* sound is very similar to the first, but is shorter and rather louder, and is compared by Laennec to the noise "of a valve, or a whip, or the lapping of a dog." The first sound is synchronous with the pulse in the arteries near the heart; and the second succeeds the arterial pulse, after an interval which is scarcely appreciable. Succeeding the second sound is a *period of repose*, which is at length interrupted by a recurrence of the first sound.

In disease these sounds become subject to various modifications, which will be hereafter noticed.

II. *The Impulse.*

At the moment of the occurrence of the first sound, the ear applied to the stethoscope is slightly elevated, and feels an impulse, succussion, or shock, which produces the sensation of something striking against the parietes of the chest from within. This impulse is synchronous with the first sound, and with the pulse in the arteries near the heart.

The second sound is ordinarily accompanied with no impulse—so that, to each beat of the arterial pulse, there are commonly two sounds and one impulse of the heart. In some cases, however, a slight impulse accompanies the second sound—especially in children, in persons who have narrow thin chests, and in some cases of disease. This impulse occasionally attending the second sound is designated by Dr. Hope as the *back-stroke*, from the fact of its occurrence at the moment when the heart appears to be receding from the thoracic parietes.

III. *The Extent of the Pulsations.*

The extent of the impulse and sounds, or the space over which the impulse and sounds are perceptible, is very different in different individuals. Laennec observes that "in a healthy person, moderately stout, and whose heart is well proportioned, the pulsation of this organ is felt only in the cardiac region, that is, in the space comprised between the cartilages of the fourth and seventh left ribs, and under the lower end of the sternum." This observation seems applied by Laennec to the extent both of the impulse and the sounds, for he directly proceeds to give the order of the places in which successively the sounds become audible, when, from disease or other causes, their extent increases beyond this region. Dr. Williams, in his able "Exposition," also speaks of this region, as the ordinary limit of the *sounds*, "in persons of middling stoutness and healthy proportions."

From a neglect to distinguish between the extent of the impulse and that of the sounds, the writings of Laennec, and other authors, present much apparent confusion. In all cases of healthy persons, and, with very few exceptions, in cases of disease, the extent of the sounds is considerably greater than that of the impulse. As a general rule, in perfectly healthy, well-proportioned persons, in a state of quietude, the extent of the *impulse* is but little greater than the precordial region. The extent of the *sounds* is considerably greater than this—indeed I have never examined a healthy person in whom the sounds were not audible some distance from the precordial region; and in many apparently healthy and well-proportioned persons, I have heard the sounds over every region of the chest. Both the impulse and the sounds are perceived in the greatest intensity in the precordial region—those of the right side of the heart being observed by applying the stethoscope to the lower end of the sternum, while those of the left side of the heart are observed between the cartilages of the fourth and seventh left ribs.

The extent, both of the impulse and the sounds, is varied by many circumstances. In very fat persons their extent is very limited—that of the impulse sometimes not exceeding a square inch. On the contrary, in persons who have thin narrow chests, and in children, the extent is greater. Any circumstances, which augment the rapidity and violence of the pulsations of the heart, increase the extent of the impulse and the sounds—on the contrary, the extent is diminished by circumstances which render the pulsations slow and feeble. The extent of the impulse, however, is not always increased or diminished in proportion to that of the sounds; and, in the investigation of diseases, the *relative* extent of the impulse and of the sounds is to be carefully observed. The cases in which the extent of the pulsation is increased by diseases of the heart, will be specified in treating of the particular diseases. Independently of disease of this organ, however, this extent is increased by many circumstances, the general principles of which should be well understood. Laennec observes, that "a hepatized lung, or one strongly compressed by an effusion in the chest, transmits the pulsations better than a healthy lung permeable to air. The result accords with the general principle of *solid bodies being the best conductors of sound*. But it has also appeared to me," he says, "that the aufractuous excavations in the lungs, produced by the softening of tubercles, have constantly the same effect; a circumstance not so easily explained, unless we suppose that, in this case, the sound is transmitted, not through the cavities, but along their indurated and condensed boundaries. It is thus that in tubercular excavations in the summit of the right lung, we shall hear the pulsation of the heart better under the right clavicle and axilla, than on the left side." This author remarks, in a note, that it has appeared to him "generally true, that tuberculous excavation and pneumothorax transmit the *sound* of the heart rather than its impulse; while hepatization of the lung, and compression from effusion, occasion results the reverse of these."

These observations of Laennec may be regarded as strictly correct, but his explanation of the phenomena is not very fortunate. The more general principle, one to which Dr. Williams adverts, is, that *bodies of equal density conduct sounds better than bodies of unequal density. Solids* generally are good conductors—as, for instance (the circumstance which led Laennec to the discovery of the stethoscope), the scratch of a pin at one end of a long beam may be distinctly heard by applying the ear to the other end. *Air*, too, the common medium for conducting sounds, is well adapted to this purpose. But a medium constituted of frequent *alternations* of air and solids is a bad conductor. Hence feathers, hay, shavings, and all bodies of a loose or spongy texture, are bad conductors—being in fact, from the air in their interstices, composed of frequent alternation of air and solids. Such is the texture of the healthy lung—composed of frequent alternations of *air* and *cellular tissue*, each of which simply is a good conductor. Hence the healthy lung very imperfectly transmits the sounds of the heart to remote parts of the chest; but if the lung is consolidated by engorgement, hepatization, tubercular degeneration, compression from effused fluid, or any other cause, it becomes a simple medium of uniform density, and therefore a good conductor. On the contrary, if a whole lung, or a large portion of lung, is destroyed by disease, so as to leave a large vacuity filled with air, this air, being a simple medium, becomes a good conductor.

These collections of air, as Laennec intimates, transmit the sounds of the heart, rather than the impulse; while the jar, or succussion, produced by the impulse, is best propagated by a solid or fluid conducting medium. I have seen this exemplified in the frequent changes of a large tubercular cavity, with firm sub-cartilaginous walls, occupying the whole space of the right lung. When this cavity was filled, or nearly filled, with a fluid (as indicated by percussion, a guggling rhonchus, &c.), both the *sounds and impulse* of the heart were propagated through the right side of the chest; on the contrary, when a violent paroxysm of coughing, with vomiting, caused the ejection of a great quantity of purulent matter, leaving the cavity occupied only with air (as indicated by percussion, a cavernous rhonchus, and pectoriloquy), only the *sounds* of the heart were transmitted. So if either cavity of the pleura is filled with an effused fluid, as in pleurisy, or hydrothorax, both the impulse and sounds are transmitted; while air in the cavity of the pleura (pneumato-thorax) transmits only the sounds. From these considerations it is obvious that the extent of the heart's pulsations must afford valuable indications, not only regarding the heart itself, but also regarding the condition of the lungs and pleura.

IV. *The Rhythm.*

The Rhythm of the heart's action, or the order of the successive actions of the different parts of the heart, has been a subject of much discussion in the periodical journals, and other publications, during the last five years. This discussion involves the explanation both of the natural impulse and sounds, and of the principal pathologic phenomena observed in the auscultation of the heart.

So long as the principal points of this discussion remain undecided, the auscultation of the heart must be attended with some uncertainty. Many phenomena, however, the *causes* of which have not been fully explained, afford valuable diagnostic indications. Certain symptoms, such as unnatural variations of the impulse and sounds, have been found invariably accompanying particular diseases of the heart—the occurrence of these symptoms, therefore, affords decisive indications of the existence of such diseases, though the immediate causes of the symptoms may not have been philosophically explained. The use of the stethoscope has already afforded us many precise and certain diagnostic indications in cardiac diseases, these indications being drawn from the safest source—experience; still, there can be no reason to doubt, that a true philosophical explanation of these diagnostic signs would, in many cases, facilitate our investigations.

The part of this subject on which there has been the greatest diversity of opinion—that which has been the hinging point of discussion, and which has given rise to numerous different hypotheses—is *the sounds of the heart*. These hypotheses, it will be remembered, have been chiefly regarding the immediate causes, or the philosophy, of the stethoscopic phenomena; while there has been little diversity of opinion regarding the diagnostic indications of these phenomena—points which have been settled by experience.

All agree that each of the two sounds is in fact a double sound, formed by a union of sounds from the two sides of the heart; the different successive actions being simultaneous in the two sides of the heart, and producing similar sounds. Hence, to hear the portion of the sounds originating from either side of the heart, the stethoscope is applied to the region of that side—being applied to the lower end of the sternum in listening to the right side of the heart, and between the cartilages of the fourth and seventh left ribs in listening to the left side.

Hypothesis of Laennec.—According to the hypothesis of Laennec, the *first* sound of the heart is produced by the systole of the ventricles—which systole occasions also the impulse, and the arterial pulse, both of which are synchronous with the first sound. The *second* sound is produced by the systole of the auricles, which immediately follows that of the ventricles, and restores the ventricles to a state of fulness. Succeeding the second sound, is the *period of repose*, during which the ventricles remain full, and the auricles become gradually filled by the afflux of blood from the veins. This period of repose is at length interrupted by a recurrence of the ventricular systole.

The period of a complete action of the heart he estimated to be occupied, one half by the contraction of the ventricles (the first sound); one fourth by the contraction of the auricles (the second sound); and one fourth by the period of repose, during which there is a complete cessation of action in all portions of the heart. According to this hypothesis, in twenty-four hours the auricles have eighteen hours, and the ventricles twelve hours of repose—the repose of the ventricles being during their state of fulness.

Hypothesis of Mr. Turner.—The hypothesis of Laennec was undisputed, from the time of its publication in 1819, till the year 1828, when Mr. Turner, Professor of Surgery in the Royal College of Surgeons, published, in the "Transactions of the Medico-Chirurgical Society of Edinburgh," a paper, in which he advanced a new hypothesis.

Mr. Turner cited the opinions of Magendie, and some of the older physiologists, Haller, Harvey, Lancisi and Senac, who all agree, from ocular examination of the heart's pulsations in living animals, that the contraction of the auricles immediately precedes that of the ventricles. Lancisi, in particular, asserts, that the contraction of the ventricles commences even before the completion of the auricular contraction.

Mr. Turner observes, that, from his own examination of the action of the heart in living animals, "the contraction of the auricles appeared the first motion of the heart, and was followed so immediately by that of the ventricles, that he has found it very difficult, if not impossible, to distinguish any interval between them." He concludes, that, "in applying the ear or the hand to the thorax, the contraction of the auricles either is not evident to the senses, or is perceived continuous with that of the ventricles; and that the two contractions" combined, produce the first sound and the impulse. The second sound, he conjectures, may be produced "by the impulse occasioned by the falling back on the pericardium of the relaxed heart in its diastole, after it has been elevated or moved from its place in the systole." He suggests, also, that the power by which the ventricle expands immediately after its systole, whether a vital action or a simple mechanical elasticity, may contribute in part to the production of the second sound.

About the time that Mr. Turner's views were published, Dr. Barry published a Thesis containing a different hypothesis. He maintained that the sounds are produced, not by the contraction, but by the dilatation of the cavities. According to his views, the first sound is occasioned by the diastole of the auricles, the second by that of the ventricles.

Since that period an able discussion has been continued in the different periodicals, in which Drs. Williams, Hope, Corrigan, Haycraft, Pigeaux, Stokes, and several others, have participated. Dr. Elliotson, of the London University, has afforded much valuable practical information on this subject; and many pertinent remarks from Dr. James Johnson have, from time to time, appeared in the London Medico-Chirurgical Review. Various new hypotheses have been promulgated by the different gentlemen who have engaged in this discussion, and the subject can by no means be considered as yet clearly settled.

Dr. Corrigan maintains that the *impulse* against the side is occasioned by the diastole of the ventricles, "being dependent on the force with which the auricles send their blood into the ventricles;" and that "the *first sound* is caused by the rush of blood from the auricles into the dilating ventricles," and the *second sound* "by the striking together of the internal surfaces of the ventricles" in their systole. In maintaining this hypothesis, he asserts that the impulse and first sound precede, and are not synchronous with, the arterial pulse; and he denies that hypertrophy of the ventricles occasions a preternaturally strong impulse. On these points he is opposed by commonly received opinions—indeed, by well-established and obvious facts.

Dr. Haycraft, in his hypothesis, differs but little from Dr. Corrigan—and principally in supposing that the ventricles possess a "muscular diastolic action"—a supposition, which obviates the necessity of denying the well-established principle that hypertrophy of the ventricles occasions a strong impulse. His hypothesis, however, like that of Dr. Corrigan, in several other points is opposed by obvious facts.

[To be continued.]

INTRODUCTION OF AIR INTO THE VEINS.

[Several cases have recently been published of the fatal effects of air in the veins. We have been favored with the following interesting history of a case of this description that recently occurred at Paris.]

A mantuamaker, aged 18, of a feeble constitution, bore for many years past a scrofulous tumor at the superior and lateral part of the neck, which increased gradually every year. It was about the size of the head of a fœtus *à terme*, when the patient entered the hospital La Charité, the 27th Sept. 1832.

M. Roux decided to extirpate it. He made a crucial incision of the integuments, dissected up the flaps, dividing the cellular adhesions which united the tumor to the surrounding parts, and tying in his course some small arteries that threw out blood. He then raised the tumor with the left hand, to continue the dissection, when suddenly a peculiar sound was heard, a kind of "sufflement," analogous to the sound made by air when a small quantity of it (quelques bulles) enters the vacuum of an air pump. At the same moment the patient uttered a plaintive cry, throwing herself from one side of the bed to the other; the inspirations became long and painful; the respiratory muscles were seen to contract with force; the pulsations of the heart increased, the arterial undulations becoming more feeble. A râle was heard, produced by the passage of the air through the mucosities accumulated in the bronchiæ; the respiration became more and more heaving. Finally there supervened one long inspiration, followed by a short one, and all the apparent symptoms of death.

On the appearance of this accident, M. Roux suspected the introduction of air into the veins, compressed the wound with the fingers, caused frictions to be made over the precordial region, and glasses of cold water to be thrown upon the face; at the same time the nostrils were excited with the feather of a pen dipped in ammonia. After some minutes the heart was perceived to recommence its pulsations, and the respiration returned. The patient being questioned, was at first only able to stammer, and to express herself by interrupted sounds, similar to those made by patients who are affected with a paralysis of the vocal organs. A certain quantity of mucus now escaped from the mouth. Finally she commenced to articulate and to complain of her trouble.

M. Roux discontinued the operation, tied the vessels, and strangled with a double ligature the tumor, three quarters dissected. The patient was covered with very hot cloths, and she had given her alternately, every hour, a spoonful of ether and of Malaga wine. Until the 5th day, no accident. On the 6th the tumor, reduced to a putrid state, was taken away without difficulty. Suddenly, on the morning of the 7th day, she was seized with slight oppression, speech embarrassed, succeeded by a comatose state, and death during the night.

Autopsy.—The wound was bounded below by the clavicle, above by the mastoid region, within by the larynx and the muscles of the trachea, on the outside by the posterior muscles of the neck. The tumor reposed immediately on the cellular sheath of the carotid arteries and jugular vein. It was covered by the skin and the sterno-mastoid muscle. Skin generally pale; the cellular sheath of the vessels of the neck was divided; the internal jugular vein was divided transversely, the lower mouth of the vessel being perceived gaping, with its parietes already thickened. A probe being introduced, penetrated as far as the subclavian vein. The carotid artery and pneumo-gastric nerve were untouched.

The lungs were crepitant; bronchial ramifications of the right side engorged and filled with a spumous serosity; left lung less engorged; emphysematous points were perceived under the poumonic pleura. Cavities of the heart empty. The descending aorta, being punctured in different places, permitted a perceptible quantity of air bubbles to escape, mixed with a bloody serum; the iliac arteries presented the same phenomenon, but to a less marked degree. The arteries at the base of the brain did not contain any air. The cerebral ventricles enclosed a small quantity of yellow serosity. The veins offered nothing anormal. The digestive apparatus healthy.

MEDICAL IMPROVEMENT.—NO. X.

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It is sometimes necessary to call vice, ignorance, and indolence, by their proper names. Error may be so deeply rooted, and abuses may become so inveterate, that gentle means will be of no avail, and not attract sufficient attention to produce an investigation of the reality and nature of existing evils. There may be a state of apathy, in which the public mind is almost universally benumbed, so that nothing short of a series of vehement and impassioned philippics, by exciting a general indignation, will arouse it to awake from its slumbers. Various and opposite measures may, therefore, be equally proper, provided they are seasonably timed, in combating error and defending truth. In the present case, it is confidently hoped that gentle advice alone is sufficient. The majority of physicians are strongly attached to their profession, and it is presumed, if their attention could be turned to existing defects, they would wish for a radical reform, and not content themselves to remain behind the spirit of the age, in any essential improvement. They have contributed their full share to the benevolent institutions of the day, and have already made considerable exertions to add to the respectability and usefulness of their own body.

In these essays, it has been the disposition of the writer to view things, as much as possible, upon their favorable side. He has endeavored to extend his charity, and to suppose, where he has noticed defects, that they are the result of accidental circumstances, and do not generally arise from any uncommon faults of the possessor. He takes it for granted, that his profession, as a body, wish to excel, and if they are only reminded of their deficiencies, they have a disposition to correct them. Few men are satisfied with mediocrity, if they are conscious that they can attain to a higher standing. It has been the aim of the writer to show that a higher standing is easily attainable, and that it is no difficult matter to elevate the whole medical profession.

To increase their respectability, influence, and usefulness, physicians have only to adopt similar measures to those which are pursued by every other class of society, in this age which is so distinguished for improvement. They are to increase in knowledge. Information is the great lever, which moves the machinery of the world. The power, which preponderates over all others in regulating human affairs, is knowledge. Passion and appetite unquestionably have an immediate influence, and for the time occasionally revel without control ; but their reign is short, and their effects transient, where knowledge of the right kind is generally diffused. Where there is a lack of information, there can be no very accurate sense of moral obligation. When mankind have learned their true interest, and know how to distinguish the right from the wrong, in the end they always prefer truth to error ; and no one prizes ignorance, who is satisfied that the acquirement of knowledge is in his power, and is attainable without the sacrifice of some other object which is necessary for his happiness. The true way to induce mankind to obtain knowledge, is to show them that it is indispensable to their happiness, and that without it they can never become very useful to themselves or others. When they come to feel their deficiency, they will try to learn.

Presuming that the great body of physicians are men of integrity and benevolence—and this is undoubtedly the fact with respect to a very large majority—the principal part of the difficulties which exist in the profession, directly or indirectly, arise from the different degrees of knowledge which is possessed by the individual members. Considering the great facilities for acquiring knowledge, to those who have not reflected much upon the subject, the defect of information which still prevails in many parts of the country, with regard to the most improved modern practice, would be incredible. The writer is favored with a tolerably extensive correspondence, and he scarcely receives a letter which does not refer to some difficulty or deficiency that might be remedied, it would appear, with tolerable ease. In some places, the physician almost always begins with bleeding, whether the disease is acute or chronic, febrile or spasmodic, atonic or entonic, inflammatory or typhoid. In others, nearly every patient is drenched with tartar emetic, and a nauseating course of antimonials. In many parts of the country, the practice in cynanche maligna, croup, colic, and pneumonia typhodes, has not improved for half a century. Many still adhere to the expectant method, and except to amuse, scarcely make an effort to allay the severest suffering.

In almost every other department of the sciences or arts, at the present day, scarcely a discovery or improvement is made, but the knowledge and practice of it is soon diffused over the civilized world. Besides the larger periodicals, almost all classes have their weekly papers, which are taken by all who wish to excel. This is not so generally the case with our profession. The majority of them, particularly of country practitioners, do not probably take any medical periodical, and the proportion is much smaller of those who read a weekly professional journal. Those who do read, are apt to confine themselves to such publications as favor their former views, and rarely take pains to become masters of the opinions and practice of others. They only travel again and again over a certain portion of the field, and leave the other sections still unexplored. Even the important parts of a work, which do not happen to coincide with existing prejudices, are often passed by unnoticed. For the first century after Sydenham, every physician had the works of the English Hippocrates in his library; and yet, as has been already noticed, it was more than a hundred years after his cool regimen in the smallpox had been published, before the practice was generally adopted.

Many parallel cases, nearly or quite as palpable as this instance of the treatment of smallpox, might be mentioned, which exist in various parts of our country, at this very hour. The virtues of sanguinaria, and of several similar articles of the alterative, deobstruent class, and their application in such diseases as cough, croup, rheumatism, neuralgia, &c., have been known for a considerable time, and are now indispensable to the best management of several complaints—and yet, in many places, they are hardly known by name, and never employed to any purpose. Since Paris recalled the attention of the profession to elaterium, how many have neglected to employ this all-important article, in appropriate cases of dropsy? Is the great value of nitrate of silver generally known? How many are able to distinguish with accuracy, when alkalies, or when acids, are the proper palliatives in calculous affections? Is the distinction between *real* exhaustion and *apparent* debility (or, as it has been lately, with much propriety, called, *sedation*) generally well understood? Has the difference between irritability and torpor, in low diseases, commanded much attention? And above all, has the great insusceptibility of the system to the curative action of ordinary remedies, in ordinary quantities and frequency—which is the very point that constitutes the practical peculiarity of malignant diseases—attracted much notice? Physicians, who are aware of this last fact, cure numerous cases of malignant diseases, which are almost certainly fatal when treated upon the common principles of good practice in non-malignant and common complaints.

There are some few principles that are as completely settled in medicine, as any proposition in the exact sciences. The most prominent of these is the antiphlogistic regimen in every entonic disease, while the entonic state continues. At the present day, in this country, none but a madman disputes this point. Many seem not to be aware of this fact, and suppose, or pretend to suppose, that there exists a class of physicians who employ stimulants and tonics in phlogistic or entonic cases. The writer, with the most perfect confidence, can assert that he never met with a physician of this description in his life.

Where then is the difficulty? Whence all the noise and clamor upon this subject? It is only upon two points; and nearly all the misunderstanding resolves itself into the different degrees of information, and the relative knowledge of facts. The first question is, how the reaction of atonic diseases, and their heat, dry skin, and other symptoms which counterfeit entony, are most properly treated? The second is, whether the insusceptibility of malignant cases may be safely met by a proportional energy of practice—an energy which is inadmissible, it is agreed, and might even prove deleterious, in ordinary cases? The atonic inflammations, of course, are comprehended under these heads. The employment of alterative and deobstruent remedies belongs to the first question, that of exciting and supporting agents to the second. Many appear not to have studied these subjects at all, and to have had no curiosity to read the writings that treat of them. They seem not to be acquainted, except from very loose report, with the form which many diseases of this country have assumed within the last thirty years.

There appears, unaccountably, to be a great defect of knowledge upon these all-important points, and a great reluctance to examine the testimony with respect to the true method of treating diseases of these kinds. It is the facts only that are necessary to be known; theory has little or nothing to do with the matter. The practice in entonic diseases is just the same as it was left by Huxham, following in the steps of Sydenham, only we have better means to treat them, owing to our improved materia medica. No, it cannot be too often repeated, because the subject is so frequently misunderstood, it is the atonic fevers and the atonic inflammations, or rather those of them which counterfeit entony, and malignant diseases, that are almost the exclusive subjects of modern medical disputes. Those, therefore, who imagine that there is any question concerning real entony, are entirely deficient in, what lawyers would call, the very *gist* of the matter.

This brings us again to the necessity of knowledge, and shows us how perfectly fruitless all disputes are, when the parties do not understand each other's premises, or are ignorant of each other's diseases. If they have not magnanimity enough to learn the first principles of their opponents, and to examine the facts and the testimony by which they are proved, the contention must be endless. But, if they are only candid inquirers after truth, as soon as they have acquired the same degree of information, upon a given point, they will be agreed. It is, however, very hard for many to become docile, and receive information from an opponent, or from any source except their own sect or school. However, in this age of free inquiry and close investigation, such prejudices are every day lessening. The learned have ceased, in profession at least, to be governed by authority; and it is hoped that physicians are ready to receive and adopt the truth, from whatever source it may be derived. S.

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BOSTON, NOVEMBER 27, 1833.

TYPHOUS FEVER.

It is a fact deserving notice, that owing to some cause not easy to assign, the amount of fever at present existing among us exceeds considerably that presented at the same season for many years. We say the cause is not easy to assign; for the regular and uniform temperature which prevailed during the summer, seemed less likely to produce a predisposition to febrile disease, than the very great transitions and extreme heat with which we are often visited. However this may be, the prevailing fever presents itself with every variety of gradation, from a state which scarcely exceeds that of temporary uneasiness, to one in which the worst symptoms of the typhus described by authors are fully developed. In the mildest form the patient is scarce sensible of the exact period of the invasion; the commencing paroxysm is either not noticed at all, or is mistaken for the transient effect of some accidental cause. The patient finds himself listless, and indisposed to make any effort; he observes that his usual appetite is wanting, and, if he force himself to exertion, that his strength is not equal to sustaining it. This state will often continue several days, and may gradually give place to recovery without medical advice having at all been applied for. On the other hand, it is more likely that the debility will go on to increase, and that the patient will be seen in a stage in which little evacuation is needed, and in which the object will be to assist the vis medicatrix in restoring to the system its wonted powers. In this form of the disease the patient will often continue for many weeks with scarce an appreciable change in his condition, and requiring little except light nutriment.

A very different series of phenomena is presented by those cases which commence with pain in the back and head, severe rigor, a full throbbing pulse, and those symptoms which indicate a sudden and violent commotion of the system, and whose progress is marked by a daily evening paroxysm, by total prostration of the strength, a dry brownish coat on tongue, sordes on teeth, delirium and subsultus. Cases of this kind are now to be met with, which fully answer to the vivid description of typhus given by foreign practitioners, and particularly by Armstrong, who, as is well known, has given to this class of fevers peculiar attention. As this assertion will be thought doubtful by some, and that the comparison may be within the reach of those to whom it would be interesting to institute it, we subjoin the following description of the different grades of this disease, which we obtain from Dr. Boott's account of the life and opinions of the author now named.

"The variation in the progress and symptoms of typhus depends upon the condition of the persons it attacks, and upon the effects it produces on the different organs which are particularly exposed to the operation of its remote cause. There are, of course, intermediate shades of mildness and severity in its character; but, for the sake of illustration, three examples may be selected, as exhibiting the ordinary phenomena of this formidable malady.

It begins with a cold stage, which varies in degree and duration; being sometimes slight and protracted, or very severe, like that of ague. As this declines, the skin, on the reaction being fully developed, becomes pungently hot and dry; the face flushed; the eye bright and injected; the respiration hurried; the pulse full, hard, and quick; the tongue furred, but moist; and signs of local disturbance occur in different parts, probably in the head, indicative of acute inflammation in the brain or its membranes. These symptoms, if the inflammation existing in the brain or elsewhere does not speedily lead to a fatal termination, last four or five days; and then the appearances of ardent fever begin to decline; the heat to fall; the respiration to become more feeble; the strength, which at first was not materially affected, rapidly to sink; the pulse to lose its force, and to become soft and compressible; the lips and cheek to assume a leaden or purplish hue; and the tongue to become dry and brown; a change which is attributable to the specific affection of the mucous membrane of the bronchia, and to the effect produced through it upon the blood, which, not being duly arterialized, fails to maintain the energies of the brain and nervous system; so that the muscular and vascular systems ultimately become debilitated from the defect of their natural excitant.

In another form the excitement which succeeds to the cold stage is less intense; the fever is not so fully developed; the heat not so high; the respiration not so hurried; the pulse not so full and quick; and the local signs of disturbance not so urgent. These milder symptoms last seven or eight days; the tongue remaining moist and furred, either white or yellowish, and redder than natural at the tip and edges, with more or less cough and huskiness of voice. At length the same change as in the preceding example begins to take place, but at a later period by three or four days; the heat falls, the strength sinks, the pulse loses its force, the tongue becomes dry, and the same duskiness of complexion follows from the defect of decarbonization in the blood, and from the impression made through it upon the general system.

In a third form the excitement is very transient. Instead, as in the two former examples, of a well-developed fever, lasting from three to four, or from six to eight days, there is in this variety scarcely as many hours of even imperfect excitement, and this is rapidly succeeded by that collapse which is indicated by a cool skin, a soft feeble pulse, a weak respiration, a dark dry tongue, a prostration of strength, a weak voice, a feeble cough, a dusky lip and cheek, from the immediate accession of a severe bronchial affection ; so that in this formidable variety the last stage of the other examples is almost coeval with the onset of the disease."

There is a complication of typhus not unfrequently met with, the merit of describing which with distinctness, belongs, we believe, also to Armstrong ; we mean that with delirium tremens. If we mistake not, the first accurate description of the latter affection given in any medical work, was that introduced by this author in his account of typhus. It has now for many years been recognized as a distinct disease, and as such has employed the pens of some of the ablest writers in this country; but of its mode of invasion and the symptoms it exhibits when it supervenes on typhus, we know of no better description than the following short sketch which we extract from the work already referred to.

" Sometimes there is a state of general irritation which comes on suddenly in the advanced stage of typhus, and which may exhaust the patient in his feeble condition, if not promptly removed. It is indicated by restlessness, loss of sleep, constant motion of the arms, and sometimes by a wild delirium. This state is brought on frequently by too close a room, or too high a temperature ; and fresh air will often remove it. But opium is in most cases its true antidote, and may be given with immediate advantage where the tongue is moist. It must be more cautiously administered when the tongue is dry and glazed.

In the case of habitual drunkards, or of persons who have been accustomed to drink much malt liquor or spirits, this state is by no means unfrequent ; and if the habits of the patient are known, it may be allayed by small quantities of their accustomed stimulant, which does not operate prejudicially on them, as it would on persons unaccustomed to its use."

It is not a little to the credit of Dr. Armstrong, that with his strong prejudices in favor of the theory of congestion, and the depletive mode of treatment in typhus, he should have detected and pointed out so clearly the true mode of treating this affection, the obvious symptoms of which are so remarkably in accordance with his views. At the present day, however, and among us, the main value of this description consists in the connection of the facts which it presents, since the relation of delirium tremens to typhus is now less remarked than formerly. It may farther be observed that when delirium tremens supervenes on typhus, the symptoms of the former usually take the lead ; and if sleep can once be obtained, the patient rapidly recovers. Frequently, however, the former train of symptoms recurs ; and though the delirium ceases, the system remains in a state of prostration, and recovery proceeds with that extreme slowness which forms the characteristic of the original disease.

BRITISH PRIZE ESSAY.

The following proposition has been communicated to us for publication, and we commend it to the notice of those of our readers who feel inclined to enter the field with their transatlantic brethren.

Prize Essay, proposed by the Medical Reform Association.

For the three best Essays on the following subject, three prizes are offered.

Subject—"On the present state of the Medical Science and Practice in the United Kingdom, and the most advisable and efficient mode of promoting the advancement and the improvement of both in all their branches."

"For the *best* Essay will be awarded the sum of £50 sterling; for the *second*, the sum of £30; for the *third*, the sum of £20.

Conditions.—(1.) The competition is open to *all* persons, whether of the medical profession or not, and the award will be made in *public*. (2.) The Essays are to be written in the English, French, or Latin languages, and these only. (3.) They must be transmitted to Dr. Epps, 89 Great Russell Street, Bloomsbury, London, on or before the 1st day of March, 1834. (4.) They must be clearly and neatly written, and *not* in the handwriting of the author. (5.) Each Essay is to bear a motto, and to be accompanied by a sealed letter, with a corresponding motto to that inscribed upon the Essay. Within the sealed letter must be the name and the place of residence of the author. (6.) None of the letters will be opened but those connected with the mottos of the successful Essays, and the unsuccessful Essays will be delivered, upon satisfactory reference, by Dr. Epps. The Prize Essays will be returned to their accredited authors, who may, if they think proper, publish them for their own advantage; otherwise they will be published by the Association.

Signed by order of the Association,
John Epps, M.D., *Hon'y Sec'y.*

N. B. One hundred pounds, the amount of the three prizes, are already lodged with the Treasurer, Joseph Hume, Esq. M. P., who, with the other judges, will *publicly* deliver the several sums, as they shall be awarded to the successful candidates. The names of the other adjudicators will be published at a future and not distant period. J. E.

Treatment of Facial Neuralgia, with Belladonna Poultices.—M. Deleau highly recommends the topical application of the pulp of the root of the belladonna, obtained by boiling, to the part affected with the neuralgic pain. It is well to continue the cataplasms until a certain degree of "strychnomania" is induced.

The author assures us that he has seldom failed, when there was no inflammatory affection of the nerves existing.

We must persevere in the use of the remedy for some time, if the beneficial effects do not speedily appear.—*Medico-Chirurg. Rev.*

Lithotrity.—MM. Double, Boyer, and Larrey, read their report on M. Civiale's second memoir on the treatment of calculous patients at the hospital Necker. The cases narrated amount to 51, of whom 43 were subjected to lithotrity; and of these, 27 were cured, 10 died, and 7 remained unrelieved. Of the other 8 patients, who were cut, 5 died and 3 recovered. There were only two women in the list; and in both, the calculi were quickly removed by lithotrity. M. Civiale states, that the early youth of a patient is rather a contra-indication against the operation of breaking the stone in the bladder.—*Ibid.*

Pommade, to prevent the Hair from falling off.—Take of ox marrow, 6 drachms. Almond oil, 2 do. Powder of red bark, 1 do.

Add the powder gradually to the oil, blending them well together; then having melted the marrow over a gentle fire, mix and stir it with the other ingredients in a mortar, until it all becomes cold. Flavor it with any grateful aromatic.—*Bullet. de Therapeut.*

Several valuable communications are excluded this number for want of room, and we fear their publication must be delayed till week after next, as we have now "setting up" a somewhat *lengthy* but very comprehensive and practical essay on the art of cupping;—an essay that was written by an experienced cupper, and consists chiefly of directions for conducting the operation in different parts of the body. The subject is one but little understood in New England, and to the practitioners of the North so plain an exposition of it will be invaluable.

Whole number of deaths in Boston for the week ending November 22, 33. Males, 24—Females, 9.

Of cancer, 1—consumption, 7—infantile, 1—typhous fever, 6—accidental, 1—hooping cough, 2—fractured skull, 1—drowned, 1—unknown, 1—croup, 2—intemperance, 1—fits, 1—scarlet fever, 1—old age, 1—disease of the heart, 1—convulsions, 1—apoplexy, 1—suicide, 2—inflammation of the bowels, 1.

ADVERTISEMENTS.

MEDICAL SCHOOL OF MAINE.

The MEDICAL LECTURES at BOWDOIN COLLEGE will commence on *Monday*, the 17th of February, 1834.

Theory and Practice of Physic, by John Delamater, M.D.
Anatomy and Surgery, by Reuben D. Mussey, M.D.
Obstetrics and Medical Jurisprudence, by James M'Keen, M.D.
Chemistry and Materia Medica, by Parker Cleaveland, M.D.

The *Anatomical Cabinet* is extensive, and the *Library* is one of the most valuable Medical Libraries in the United States. Both are annually increasing.

Every person becoming a member of this Institution, is required *previously* to present *satisfactory* evidence that he possesses a good moral character.

The amount of fees for admission to all the Lectures is $50. Graduating fee, including diploma, $10. There is no Matriculating nor Library fee. The Lectures continue three months.

Degrees are conferred at the close of the Lecture term in May, and at the following Commencement of the College in September.

Boarding may be obtained in the Commons Hall at a very reasonable price.

Brunswick, Oct. 7, 1833. (Oct. 30.—eop3t.) P. CLEAVELAND, *Secretary.*

DISSECTOR'S GUIDE.

Just published by ALLEN & TICKNOR, *The Dissector's Guide, or Student's Companion*; illustrated by wood cuts, clearly exhibiting and explaining the dissection of every part of the human body; by Edward William Tuson, F.L.S., Member of the Royal College of Surgeons in London, &c. &c. First American edition, with additions; by Winslow Lewis, Jr. M.D., Demonstrator of Anatomy to the Medical School at Harvard University.

A. & T. have just received a large supply of the standard Medical Books, which they will sell on the most reasonable terms—wholesale and retail. Their New Catalogue is now ready. Persons wishing, can have them by calling or sending to their store.

CHEAP BOOKS.

Allen & Ticknor have for sale copies of the following works, at very reduced prices. United States Pharmacopœia, edition of 1828. Thacher's American Medical Biography. Bichat on Life and Death. Beclard's Additions to Bichat's Anatomy. *Oct.* 30, 1833. eop8w.

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